

B1
a distance from a skin surface of the patient to the target mass,
a set of default thermal dose prediction properties,
a set of user specified thermal dose prediction properties,
physical properties of the heat applying elements, and
images provided by the imager.

2. The treatment system of claim 1, wherein the thermal dose properties translate, at least in part, to electrical and mechanical properties of the heat applying element.

B2
3. (Amended) The treatment system of claim 1, wherein the default thermal dose prediction properties are based on a type of clinical application and include at least one of:

thermal dose threshold,
thermal dose prediction algorithm,
maximum allowed energy for each thermal dose,
thermal dose duration for each treatment site,
cooling time between thermal doses, and
electrical properties for the heat applying element.

B3
4. (Amended) The treatment system of claim 1, wherein the user specified thermal dose prediction properties include at least one of

overrides for any default thermal dose prediction properties,
treatment site grid density, and
thermal dose prediction properties not specified as default thermal dose prediction properties from the group comprised of thermal dose threshold, thermal dose prediction algorithm, maximum allowed energy for each thermal dose, thermal dose duration for each treatment site cooling time between thermal doses, and electrical properties for the heat applying element.

6. The treatment system of claim 1, wherein the treatment plan ensures that the entire target mass is covered by a series of thermal doses so as to obtain a composite thermal dose sufficient to ablate the entire target mass.

7. The treatment system of claim 1, wherein the thermal dose properties are automatically

optimized using physiological properties as the optimization criterion.

8. The treatment system of claim 1, wherein the planner limits the thermal dose at each treatment site in order to prevent carbonization or evaporation.
9. The treatment system of claim 1, wherein the planner constructs a predicted thermal dose distribution illustrating the predicted thermal dose contours of each treatment site in the treatment plan.
10. The treatment system of claim 1, further comprising a User Interface (UI) for entering user specified thermal dose prediction properties and for editing the treatment plan once the treatment plan is constructed.
11. The treatment system of claim 1, wherein the treatment plan is constructed in three dimensions.
12. The treatment system of claim 1, further comprising a feedback imager for providing thermal images illustrating the actual thermal dose distribution resulting at each treatment site.
13. The treatment system of claim 12, wherein the imager acts as the feedback imager.
14. The treatment system of claim 1, wherein the heat applying element applies one of the following
 - ultrasound energy,
 - laser light energy,
 - RE energy,
 - microwave energy, and
 - electrical energy.

B3

15. (Amended) A focused ultrasound system, comprising:
a transducer for generating ultrasound energy that results in thermal doses to ablate a target mass in a patient;
an imager for providing preliminary images of the target, and for providing thermal images illustrating an actual thermal dose distribution in the patient; and

a planner for automatically constructing a treatment plan using the preliminary images, the treatment plan comprising a series of treatment sites represented by a set of thermal dose properties used by the controller to control the transducer;

33 wherein the planner further constructs a predicted thermal dose distribution illustrating the predicted thermal dose contours of each treatment site in the treatment plan;

wherein after a thermal dose is delivered to each treatment site in the treatment plan, the actual thermal dose distribution is compared to the predicted thermal dose distribution to determine remaining untreated locations within the target mass.

18. (Amended) The focused ultrasound system of claim 15, wherein after a thermal dose is delivered to a treatment site in the treatment plan, the actual thermal dose distribution is compared to the predicted thermal dose distribution to determine changes to the dosing parameters in neighboring sonication sites.

19. (Amended) The focused ultrasound system of claim 15, wherein the planner automatically evaluates the treatment plan based on the remaining untreated locations and updates the treatment plan to ensure complete ablation of the target mass is achieved by one or more of adding treatment sites, removing treatment sites, modifying existing treatment sites, or leaving the treatment plan unchanged.

20. (Amended) The focused ultrasound system of claim 15, wherein a user can manually adjust the treatment plan based on the remaining untreated locations.

21. (Amended) The focused ultrasound system of claim 15, wherein the preliminary images and the thermal images represent three-dimensional data.

22. (Amended) The focused ultrasound system of claim 15, wherein the predicted thermal dose distribution and actual thermal dose distribution represent three-dimensional data.

23. The focused ultrasonic system of claim 15, wherein the imager further provides outlines of sensitive regions within the patient where ultrasonic waves are not allowed to pass.

24. The focused ultrasonic system of claim 23, wherein the processor uses the outlines in constructing the treatment plan so as to avoid exposing the sensitive regions to ultrasound.
25. The focused ultrasound system of claim 23, wherein the sensitive regions comprise bones, gas, and other sensitive tissues.